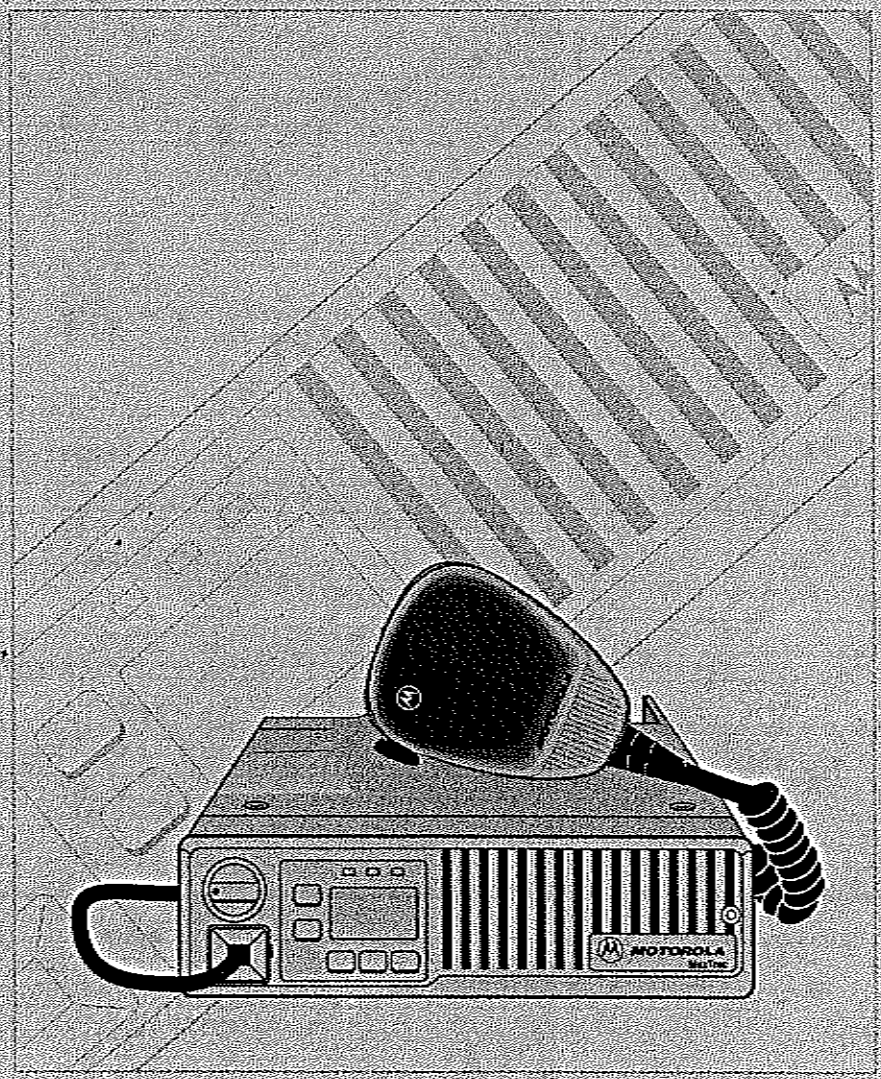
MaxTrac 800™ Mobile Radios

operating instructions



MOTOROLA

MAXTRAC 800

Scan – Mic on hook
hook grounded

MaxTrac 800™ Mobile Radios

Contents

Contents (cont.)

Contents (cont.)

Introduction

Welcome to the MaxTrac 800™ Series trunked radio family! Your choice of the MaxTrac 800 radio means you have selected the highest of standards in design, quality, and performance. This manual is designed to acquaint you with all the features, care, and service issues of the MaxTrac 800 radio (henceforth referred to as radio) to better serve all your communication needs.

MaxTrac 800™ Features

The MaxTrac™ trunked radio operates on the Motorola Privacy Plus™ trunked system in the 806-825 and the 851-870 MHz transmit bandwidth and the 851-870 MHz receive bandwidth. The following features are standard:

- 20 Channel Operation
- 15-Watt Power Output
- 3 dB Gain Antenna with 14-Foot Cable
- Non-Locking Trunnion with Hardware
- 10-Foot Power Cable
- 12Vdc Negative Ground
- ±.00025% Frequency Stability
- Time-Out Timer
- 3-Watt Internal Speaker—Front Mount
- EEPROM Field Reprogramming Capability
- System/Subfleet Indicators
- Compact Palm or Touch-Code™ Microphone (depending on model ordered)
- Rotary Volume Control
- Dual Mode, Talk-Around Capable on Three Models

MaxTrac 800™ Features (cont.)

The MaxTrac 800 series is a trunked system mobile available in six models. Refer to the chart below for the model differences.

Radio Model	No. of Systems	No. of Subfleets	No. of Conv. Modes	Standard Microphone	Telephone Interconnect	Call Alert	Private Conversation	External Alarm
820 "B1" D35MQA5GB1	1	1	N/A	Compact Palm	N/A	N/A	N/A	N/A
820 "B3" D35MQA5GB3	2	1	N/A	Touch Code™	Full Interconnect Capability	Decode only	N/A	Available
820 "B4" D35MQA5GB4	2	1	1	Compact Palm	N/A	Decode only	N/A	Available
820 "B5" D35MQA5GB5	2	2	N/A	Compact Palm	N/A	Decode only	N/A	Available
820 "B6" D35MWA5GB6	6	6	2	Compact Palm	Receive only or Optional Full Capability	Decode, Mutiple Encode	Decode, Mutiple Encode	Available
840 "B7" D35MWA5GB7	10	10	10	Compact Palm	Receive only or Optional Full Capability	Decode, Multiple Encode	Decode, Multiple Encode	Available

StartSite™ Features

The MaxTrac 800 StartSite series of models is comparable with its counterpart MaxTrac 800 Privacy Plus series, except that StartSite models include some additional features. These features are governed by software programming, leaving the StartSite models mechanically identical to the Privacy Plus models. The three features common to all StartSite models are:

- Push-to-Talk Identification (PTT–ID)
- Failsoft
- Select Inhibit

With the PTT ID feature, pressing the microphone PTT button sends your radio's identification code to your dispatcher.

When the controller fails and the radio is within range of the system, the failsoft feature (see page 8) enables the radio to automatically operate on a predetermined frequency in a non-trunked (conventional) manner. A faint beep is emitted every 10 seconds indicating the radio is in failsoft; you are still able to monitor the failsoft channel. In the failsoft mode, press the PTT to transmit and release it to listen.

The Select Inhibit feature gives the base station controller the ability to shut down any radio's operation.

Refer to the chart below for the differences between the Privacy Plus and StartSite model numbers.

MaxTrac 800 Privacy Pus Models	MaxTrac 800 SS StartSite Models
840 "B6" D35MWA5GB6	D35MQA5GG5
840 "B7" D35MWA5GB7	D35MQA5GG6

Features and Advantages of Trunking

Trunking allows many users to share a fixed number of communication channels without interfering with one another. Telephone companies for years have used trunking to make the most efficient use of their equipment, and Motorola has adapted similar trunking methods to two-way radio communication.

A trunked radio system allows a large number of users to share a relatively small number of frequencies. When a mobile operator keys the microphone to establish communications with someone else in the system, the system automatically assigns a communication path—a repeater and its frequency. Once the conversation has ended, the repeater is freed for other users. The Motorola Privacy Plus® trunked radio system has a central controller that does the automatic frequency assignment, and a repeater for each frequency the system uses. Trunking pools all the repeater air time, and this maximizes the amount of air time available to any one mobile unit and minimizes channel congestion.

Some of the key benefits of the overall Motorola trunked Privacy Plus radio system are:

- No channel monitoring required prior to transmission
- Fast system access
- Automatic channel selection
- Privacy among members of the same group
- Uninterrupted conversations
- Only one attempt is required to access the system. If all channels are busy, the call request enters a queue and the central controller will automatically assign the next available channel. A high-pitched "di-di-dit" tone will sound when the call may be completed.

Failsoft Operation

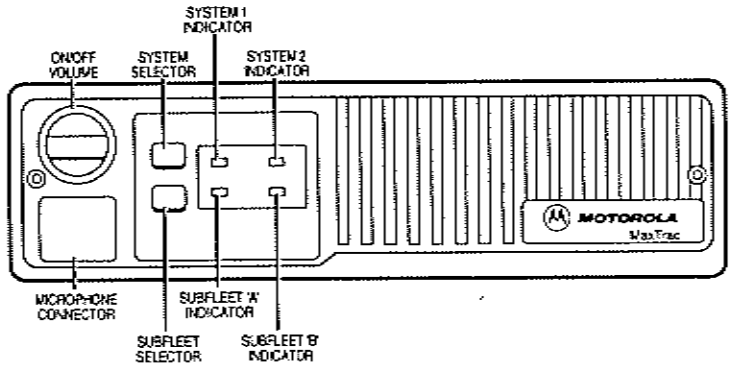
In the event of trunked system failure, radio communication is still possible using the failsoft system. When the trunked system fails, and the failsoft system is operational and within range, the radio will automatically enter failsoft. This is indicated by the presence of a continuous faint "beeping" tone every 10 seconds, accompanied by a background "hissing" noise. Please refer to the alert tone table on page 18 for instructions.

When the radio enters failsoft, it operates on a predetermined frequency in a non-trunked, conventional channel mode. Therefore, channels must be monitored before use to make sure they are not busy. If channels are not monitored, existing communications might be broken by an interfering radio operator attempting to gain access.

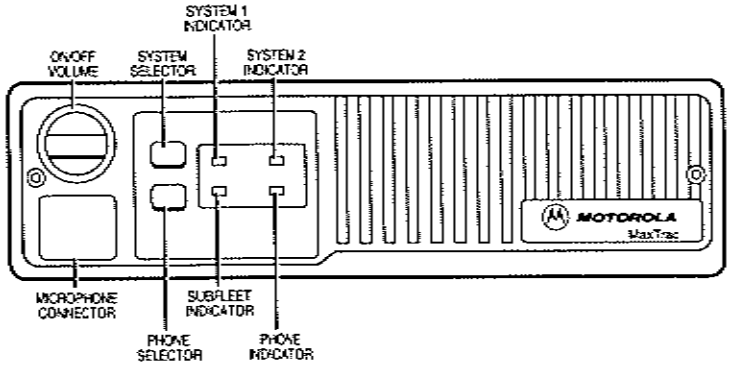
The radio will automatically leave failsoft and the failsoft tone and "hissing" noise will disappear when the trunked system returns to normal operation. Resume standard operation.

Remember, the failsoft condition is a temporary situation. The channel will be shared with other trunking system users. Please be courteous by monitoring the channel before transmitting and keeping conversations to a minimum.

MaxTrac 820™ Trunked Operation



MaxTrac 820™ Trunked Mobile Radio
B1 model (D35MQA5GB1) SYS 2 and SUB B have no light
B5 model (D35MQA5GB5)



MaxTrac 820™ Trunked Mobile Radio
B3 model (D35MQA5GB3)

Turning the Radio On

To turn the radio on, rotate the **On/Off Volume** knob clockwise until it clicks. A short chirp tone will be heard if the radio passes the radio self-check test. LED's will light indicating the last active system and subfleet used before the radio was turned off. The radio is now in standby mode and ready to receive or transmit.

Note: The radio should be turned off whenever the engine is off to avoid draining the vehicle battery.

Radio Self-Check

Every time the radio is turned on (power-up) it performs a functional self-check and, if necessary, will sound a 5-second warning tone (instead of the short chirp tone normally heard at power-up). This is an indication that the radio is no longer operating at the exact parameters set in the factory or field and should be serviced immediately. Please refer to the Self Test section of the alert tones table on page 18.

Receive Operation

Select the system by pressing the **System** button and toggling between the desired systems. The green LED will light below the selected system number. Press the **Subfleet** button until the amber LED appears below the desired subfleet.

Transmit Operation

Transmitting

Push down the PTT (push-to-talk) button on the left side of the microphone. When the **System** LED red is illuminated, or after you hear a high-pitched "di-di-dit" sound (the talk-permit or call-back tone), hold the microphone about 2 inches from your mouth and speak in a normal voice. Shouting will NOT make the transmission clearer.

Talk-Prohibit Tone

If you hear a continuous tone when you press the PTT button, this indicates the radio did not successfully access the trunking system; or, the system is temporarily out of service.

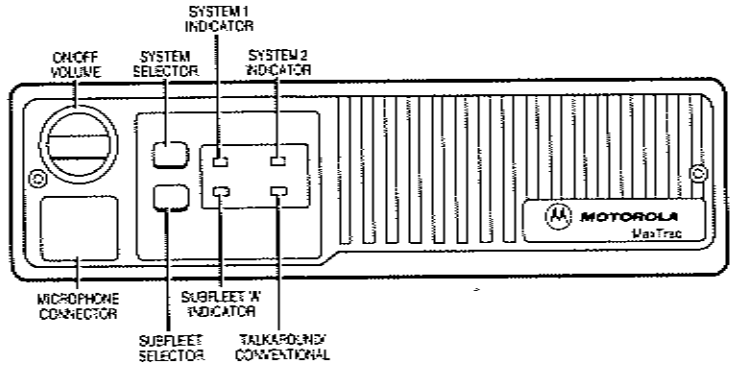
Try again when the system is back in operation. You may try accessing the system from a better location, such as the top of a hill, or when you are closer to its signal.

Busy Tone

You might hear a continuous "bah bah bah" tone when pressing the PTT button. This may indicate either (1) all channels are busy and the radio is in queue waiting for an available channel, or (2) the radio does not have authorized access to the system.

First, release the PTT button. Call-back tones sound when you have access to the system.

MaxTrac 820™ Dual-Mode Operation



MaxTrac 820™ Dual-ModeTrunked Mobile Radio
B4 model (D35MQAGB4)

Turning the Radio On

Rotating the **On/Off Volume** knob clockwise until it clicks will turn the radio on. You will hear a short, chirp tone if the radio passes the radio self-check test. LED's will light indicating the last active system and subfleet used before the radio was turned off . The radio is now in standby mode and ready to receive or transmit.

Note: The radio should be turned off whenever the engine is off to avoid draining the vehicle battery.

Radio Self-Check

Whenever the radio is turned on (power-up), a functional self-check is performed and, if necessary, a 5-second warning tone will sound (instead of the normal short chirp tone heard at power-up). This indicates the radio is no longer operating at the exact parameters set in the factory or field and should be immmediately serviced. Please refer to the Self Test section of the Alert Tones Table on page 18.

Dual-Mode Operation

A Motorola dual-mode trunked mobile radio will operate either in the trunked system mode or in the conventional, or talk-around mode.

Trunked Receive Operation

Select the system by pressing the **System** button and toggling between systems. The green LED will light below the selected system number. Press the **Subfleet** button until the subfleet A indicator LED is on.

Trunked Transmit Operation

Transmitting

Push down the PTT (push-to-talk) button on the left side of the microphone. When the **System** LED red is illuminated, or after you hear a high-pitched "di-di-dit" sound (the talk-permit or call-back tone), hold the microphone about 2 inches from your mouth and speak in a normal voice. Shouting will NOT make the transmission clearer.

Talk-Prohibit Tone

If you hear a continuous tone when you press the PTT button, this indicates the radio did not successfully access the trunking system; or, the system is temporarily out of service.

Try again when the system is back in operation. You may try accessing the system from a better location, such as the top of a hill, or when you are closer to its signal.

Busy Tone

You might hear a continuous "bah bah bah" tone when pressing the PTT button. This may indicate either (1) all channels are busy and the radio is in queue waiting for an available channel, or (2) the radio does not have authorized access to the system.

First, release the PTT button. Call-back tones sound when you have access to the system.

Receiving a Call Alert™

When a Call Alert is received (see page 19), the active subfleet indicator will flash and a series of four chirp tones will sound every 4 seconds. The LED remains flashing and the tones continue until the microphone PTT or the **System** button is pressed.

Conventional System or Talk-around Mode Operation

Receiving

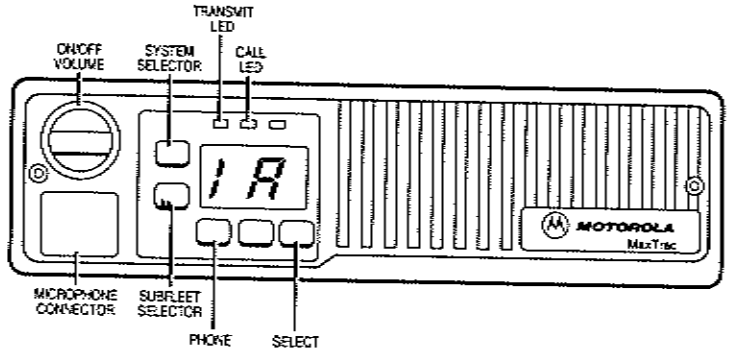
Pressing the **Subfleet Selector** button will alternately take the radio from trunked operation to conventional operation. The conventional operation is the same regardless of which trunked system indicator is active. Look to see if the **Talk-around/Conventional (T/A)** indicator is lit. If it is active, then the radio is operating in the conventional mode and not in its Trunked mode. When the radio is in its conventional operation, it will not receive a Call Alert or any signal from the trunked system.

Transmitting

If the **Conventional/Talk-around (T/A)** indicator is flashing before you press the PTT button, it means your channel is busy and you should wait until the indicator is steady before you transmit. The active **System** indicator will turn from green to red during the time you are transmitting.

Note: Because this is conventional operation, you may enable the channel monitoring function by taking the microphone "off hook" (taking it off its hang-up clip). In this condition any Private-Line® (PL), or Digital Private-Line™ (DPL), squelch code will be temporarily turned off and you will hear all activity on the channel.

MaxTrac 840™ Dual-Mode Operation without Scan



MaxTrac 840™ Trunked Mobile Radio (Dual Mode without Scan) 86 model (D35MWA5GB6)

Turning the Radio On

To turn the radio on, rotate the **On/Off Volume** knob clockwise until it clicks. A short, chirp tone will be heard if the radio passes the radio self-check test. LED's will light indicating the last active system and subfleet used before the radio was turned off. The radio is now in standby mode and ready to receive or transmit.

Note: The radio should be turned off whenever the engine is off to avoid draining the vehicle battery.

Receive Operation

Select the system by pressing the **System** button until the proper system number is displayed. Select the subfleet by pressing the **Subfleet** button until the proper subfleet letter is shown.

Conventional System Indication

When pressing the **Subfleet** button, conventional system operation will be indicated by a number without any letter characters in the display.

Trunked System Indication

A trunked system will always show a letter character in the display.

Transmitting on a Trunked System

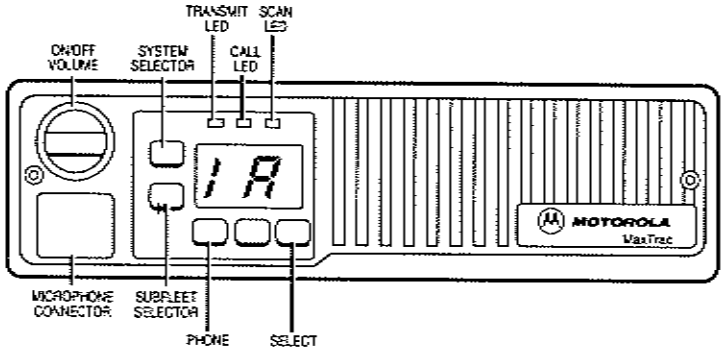
When the **Transmit** LED lights steadily, or after the high-pitched "di-di-dit" talk permit tones sound, press the PTT button and speak into the microphone in a normal voice. DO NOT SHOUT. It will not make your transmission clearer.

If your hear tone(s) when you push the PTT button, the system is alerting you that certain conditions exist. Refer to the talk prohibit tone, or the busy tone, section of the alert tone table on page 18.

Transmitting on a Conventional System

The red **Transmit** indicator (LED) will flash when there is another unit active on the channel. Do not transmit if anyone else is using the channel. When you press the PTT button on your microphone, the **Transmit** indicator will light steadily to indicate that you are "on the air." It will remain lit until the PTT button is released.

MaxTrac 840™ Dual-Mode Operation with Scan



MaxTrac 840™ Trunked Mobile Radio (Dual Mode Radio with Scan) B7 model (D35MWA5GB7)

Turning The Radio On

To turn the radio on, rotate the **On/Off Volume** knob clockwise until it clicks. The last active system and subfleet display will illuminate. A short, chirp tone will be heard if the radio passes the radio self-check. The radio is in standby mode—ready to receive or transmit.

Note: The radio should be turned off whenever the engine is off to avoid draining the vehicle battery.

Receive Operation

Select the system by pressing the **System** button until the proper system number is displayed. Press the **Subfleet** button until the proper subfleet letter is shown.

Conventional System Indication

When pressing the **Subfleet** button, conventional system operation will be indicated by a number without any letter characters in the display.

Trunked System Indication

A trunked system will always have a letter character in the right digit of the display.

Transmitting on a Trunked System

When the **Transmit** LED lights steadily, or after the high-pitched "di-di-dit" talk permit tones sound, press the PTT button and speak into the microphone in a normal voice. DO NOT SHOUT. It will not make your transmission clearer.

If your hear tone(s) when you push the PTT button, the system is alerting you that certain conditions exist. Refer to the talk prohibit tone, or the busy tone, section of the alert tone table on page 18.

Transmitting on a Conventional System

The red **Transmit** indicator (LED) will flash when there is another unit active on the channel. Do not transmit if anyone else is using the channel. When you press the PTT button on your microphone, the **Transmit** indicator will light steadily to indicate that you are "on the air". It will remain lit until the PTT button is released.

Table of Trunking Alert Tones

Type of Tone	Cause	What to Do
TALK PROHIBIT CONSTANT TONE Continuous tone when PTT is pressed	Indicates an unsuccessful attempt to access the trunked system. OR, The system is temporarily out of service.	Try again when you are in a better location. For example, when you're on a hill, or closer to the system. Wait until the system is back in operation and try again.
BUSY TONE Continuous "bah bah bah" when PTT is pressed	Indicates all available channels are busy and the radio is in queue. Or, that the radio is no longer authorized to access the system.	Release the PTT button. You will hear call back tones when it's your turn for a channel.
TALK PERMIT or CALL BACK TONE high-pitched "di-di-dit" tone signifying channel availability	You now have access to a channel.	The radio holds the channel open for about three seconds. Press the PTT and begin your transmission.
VALID KEY TONE high-pitched "chirp" tone	Signifies button press was accepted.	Proceed with desired function.
INVALID KEY TONE "Bonk" tone when a button press is rejected	Indicates inoperative feature OR illegal button press in current operating mode.	Radio is not programmed for this function OR exit current operating mode and access desired function.
TIME-OUT-TIMER TONE Low pitched "baaah" tone while transmitting	Indicates present transmission will end in four seconds.	Finish your transmission before your transmitter is disabled.
FAILSOFT TONE Continuous faint "beeping" tone every 10 seconds	Indicates failsoft operating conditions. A system failure has occurred and the mobile is operating on one channel in the conventional mode.	You can still transmit and receive, but you must share a channel with your other groups until the system is repaired.
SELF TEST TONE A 5 second "baaah" or a series of beeps when the radio is turned on.	Indicates an electrical self check of systems, detects a possible problem.	Return to a authorized Motorola service center as soon as possible.
DISCONNECT MODE WARNING TONE Continuous invalid function "baaah" tone	Reminder to exit Phone or Call Alert modes. You may be missing other types of calls.	Press the **Phone** or **Call** button to exit the mode.
TELEPHONE TIME-OUT WARNING TONE high-pitched, 15 to 20 second time	Warning that call will be terminated if not completed in 15 to 20 seconds.	Complete call or hang up. If call times-out, you must redial.

Multiple System Selectivity

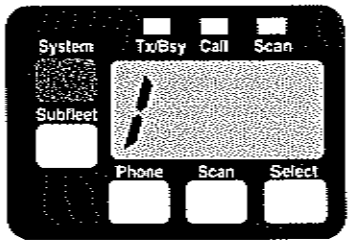
MaxTrac 800 series radios may operate on multiple trunked and/or conventional repeater systems depending upon availability. These radios are field programmable which allows the operator to select up to 10 systems (depending upon the model) to be programmed into the radio. Through the use of radio service software (RSS) and a computer at a service location, trained service personnel can add or delete systems. Each system may have its own unique set of subfleets, Call Alert signalling, and Private Conversation™ calls. After you've selected a system, there is about a one second delay before the radio can receive or transmit calls.

MaxTrac 840™ B6 and B7 Models

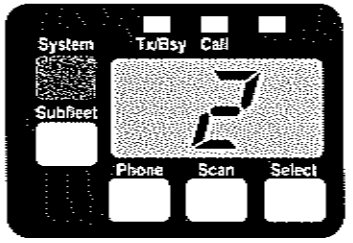
Trunked systems on the MaxTrac 840 radios are identified as follows: for the B6 model trunked systems as either 1 through 6; or, for the B7 model, as 1 through 0. This trunked system number is always in the left digit of the display. If you press the **System** button momentarily, the system digit increases by 1. Extended press of the **System** button will cause the numbers to scroll.

Conventional System Selection

Conventional systems (or channels) will come in sequence immediately following the last trunked system. However, conventional systems appear as a single number in the right digit or as a two digit number. You will know the radio is on a conventional system if there is no letter character in the display along with a number in the left digit.



MaxTrac 840™ B6 and B7



MaxTrac™ Conventional Systems

Multiple Subfleet Selectivity

A trunked radio system can divide a mobile fleet into different subfleets, each of which can communicate independently of other subfleets. This lets the fleet owner or manager organize the fleet into communication groups according to your organizational needs. Members of a specific subfleet hear only the messages intended for their subfleet.

If the operator has a radio equipped with fleetwide call, it is possible to call all the members of the fleet simultaneously, regardless of subfleet boundaries. When using fleetwide call mode and multiple subfleets are active, only the first call received will be heard.

MaxTrac 820™ B5 Models

With this model the operator may select two subfleets. The subfleets are designated as **"SUB A"** and **"SUB B"** on the front panel. Pressing the **Subfleet** button toggles between the subfleets. Push the **PTT** button on the microphone to transmit to the chosen subfleet. Members of the subfleet will only receive messages intended for their subfleet. The radio will always receive fleetwide and systemwide messages, without regard to the subfleet selected.

MaxTrac 820™ B1, B3, B4 Models

These models have only one subfleet capability, indicated by **"SUB A"** on the front panel.

MaxTrac 840™ B6 and B7 Models

On these models the subfleets are identified as letters in the second position on the display. [The system is identified in the first position.] Keeping the **Subfleet** button depressed will scroll up the list. Push the **PTT** to transmit. The radio will receive only those messages intended for the subfleet shown on the display. For example, if subfleet B is selected, you will not receive messages for subfleet E. The radio will always receive fleetwide and systemwide messages, without regard to the subfleet selected.

Call Alert™

Call Alert Decode

This feature allows an individual mobile unit in a system to receive a Call Alert or message from a dispatcher or supervisor unit. Call Alert allows the dispatcher to leave a page in a mobile radio when the vehicle is left unattended.

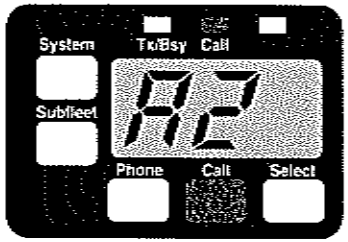
Receiving a Call Alert

When a Call Alert is received, the amber **Call LED** will flash and a series of four alert tones will sound. In MaxTrac 840 radios, the display will also show **"CA."** The radio will continue to beep every four seconds and the display will continue to flash until the PTT button is pushed or a system change is made. Turning the radio off will also discontinue the Call Alert.

Call Alert pages will not be received when voice communication is taking place, the radio is turned off, or when the radio is out of system range.

For Call Alert with external alarm, see page 33.

Multiple Call Alert Encode—MaxTrac 840™ Models Only



MaxTrac 840™
B6 Model Package

The Multiple Call Alert Encode feature allows the dispatcher or supervisory unit to selectively Call Alert or page up to eight other individual units in their system.

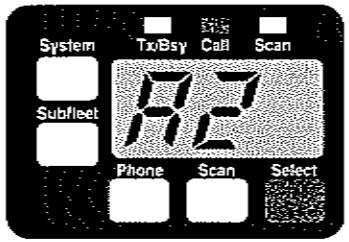
Sending a Multiple Call Alert—B6 Models

To send a Call Alert, press the **Call** button (several presses may be required) until the display shows an **"A"** in the first position. Each mobile unit is identified as A1, A2, etc. You may scroll through the ID list by pressing the **System** button for "up" and the **Subfleet** for "down". Once the ID is selected, press the PTT. This will send the Call Alert.

The amber LED flashes and the radio will beep once, indicating the Call Alert has been sent. When the Call Alert is acknowledged (see Call Alert Decode for the acknowledgement procedure), the LED will stop flashing and four beeps will sound. Press the **Call** button to return to the last used talk group.

Multiple Call Alert Encode—MaxTrac 840™ Models Only (cont.)

An invalid function tone will sound after a short period of inactivity. This is to remind you that important channel activity may be missed if you remain in this mode. Pressing the PTT, **System** or **Subfleet** buttons, or exiting the mode by the **Call** button will stop the tone.



MaxTrac 840™
B7 Model Package

Sending a Multiple Call Alert—B7 Models

The major difference between Multiple Call Alert on the B7 and the B6 model packages is that, on the model B7, the **Select** button is used to access the feature. Several presses of the button may be required, and the scan feature must be turned off to access Multiple Call Alert. Once the **"A"** is displayed in the left digit, this feature operates identically to that for the B6 package.

Private Conversation™ (Available on 840 Models Only)

Single Private Conversation—B6 Package Model

Sending a Private Conversation call

With this feature a mobile unit may exchange private calls with one other unit—usually a supervisor's. A single press of the **Call** button activates Private Conversation. The amber **Call** LED will light steadily. The letters **"PC"** will be displayed.

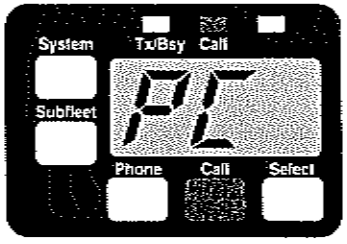
To send a private call to the supervisory unit, push PTT and deliver the message. The supervisor's unit amber LED will flash and two beeps will sound to indicate a Private Conversation request.

To return to last used talk group, press the **Call** button until the system and subfleet appears on the display. For units equipped with Private Conversation *and* Multiple Call Alert Encode, pressing the **Call** button twice will return you to the last used talk group.

Receiving a Private Conversation call

When receiving a Private Conversation, the **Call** LED will flash, **"PC"** will flash on the display, and two beeps will be heard. This is followed by the caller's message. Press the **Call** button to enter the Private Conversation mode. The **"PC"** in the display wil now light steadily, as will the **Call** LED.

You may respond to the call without pressing the **Call** button by just pressing the PTT, but the call will *not* be private.



MaxTrac 840™
Private Conversation Mode

Single Private Conversation—B7 Package Model

This feature has the same basic operation as on the B6 package model except the **Select** button is used instead of the **Call** button to access it. Multiple presses of this button may be required to return the unit to the dispatch mode. The scan feature must be "off" to initiate a Private Conversation.

Multiple Private Conversation Encode—B6 Package Model

Single Private Conversation may be upgraded to Multiple Private Conversation Encode, allowing dispatch or supervisory units to privately call as many as eight individual mobiles per system.

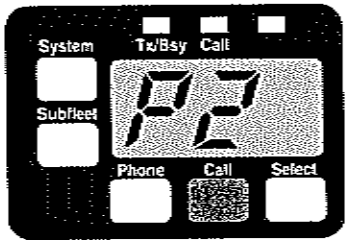
Sending a Multiple Private Conversation

A single press of the **Call** button activates Private Conversation. The display will show a **"P"** in the first position and one of the digits **"1"** through **"8"** in the second position. The digit represents the unit ID programmed for a particular mobile. The last ID used will appear in the display. The **System** and **Subfleet** buttons may be used to scroll up and down through the ID list.

To start a Private Conversation between the supervisory unit and a selected mobile, press the PTT. Pressing the **Call** button returns the radio to the last used talk group.

Receiving a Multiple Private Conversation call

When a supervisor's radio receives a Private Conversation request, pressing the **Call** button will show **"PO"** in the display. When a fleet mobile radio receives a private call, **"PC"** will show on its display when **Call** is pressed. The ID for the **"PO"** is whoever is initiating the call to the supervisory unit *at that time*. When the supervisor changes systems, or turns the radio off, the **"PO"** will be removed from the ID list.



MaxTrac 840™
Multiple Private Conversation Encode

Multiple Private Conversation Encode—B7 Package Model

This feature has the same basic operation as on the B6 package model except the **Select** button is used instead of the **Call** button to access it. Several presses of this button may be required to return the unit to the dispatch mode. The scan feature must be "off" to initiate a Private Conversation.

Telephone Interconnect (Half-Duplex Operation)

Your MaxTrac 800 series radio may be equipped with a telephone interconnect option (820) allowing you to make calls to landline telephones through the system central computer. When calls are made through the central controller, it is called a half-duplex operation. The call is between a mobile operator (who can only talk or listen at one time) and a land-line user (who operates in duplex); therefore, the operation is called half-duplex.

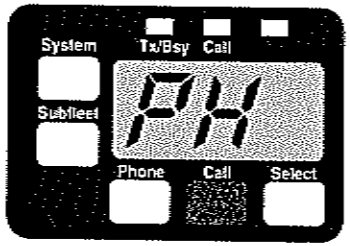
Calls between the mobile operator and a land-line user are private if the mobile initiates them. Calls initiated by the land-line user to a mobile may be private, or they may include a whole subfleet.

Placing a Telephone Interconnect Call

(Full Interconnect Capability)

If your MaxTrac 800 radio is equipped with a Touch-Code™ encoder keypad microphone, you may have the ability to place mobile-to-land-line phone calls. To place a call, press the **Phone** button on the radio.

On the 820 B3 model, the amber **Phone** LED will light. On the 840 models, a **"PH"** will appear on the display.



MaxTrac 840™
Telephone Interconnect Call

Placing a Telephone Interconnect Call (cont.)

Listen for a dial tone. If you hear a busy tone ("bah-bah-bah"), this means the system is busy and your request for a channel goes into a queue. DO NOT HANG UP by pressing the **Phone** button again. Hanging up while still in queue will disconnect your request for a phone line. When a channel becomes available, you will hear a dial tone. If the microphone is keyed while you are still in queue, you will hear a busy tone.

Use the Touch-Code microphone to dial the number. Hold the keypad key down until you hear a "beep." Continue pressing the key until the beep ends. If you misdial, hang up by pressing the **Phone** button again.

Press and hold the PTT on the microphone to transmit. Inform the person you are calling that you are using a radio and only one person can talk at a time. Explain that replies should be made only after one party has finished transmitting. The telephoned party will hear a soft beep tone after the radio party releases the PTT; this can be the signal for the telephoned party to transmit.

If the telephoned party speaks while the radio party is transmitting, the conversation will be severely interrupted. Proceed with your conversation in a normal push-to-talk manner by pushing the PTT to transmit and releasing it to listen.

The maximum call duration is determined by the traffic loading of the system central controller. Both parties will hear a high-pitched alert tone 15 seconds before the call times out; they will have 15 seconds to complete their conversation.

Discontinuing a Telephone Interconnect Call

The radio party can disconnect a telephone call by pushing and releasing the **Phone** button. If the call is not disconnected, an invalid function "baaah" tone will sound after a short delay. Other types of calls, except system calls, will not be allowed while the telephone interconnect is engaged. However, Call Alert pages may be received if the radio is in queue.

Telephone Interconnect Alert Tones

Telephone Option Disabled

If an invalid "bonk" tone is heard when the **Phone** button is pressed, the telephone interconnect option has not been enabled and telephone calls cannot be made.

No Additional Calls Allowed

If the radio is in queue and suddenly a constant out-of-range tone is heard, the system is not allowing any more interconnect calls.

Receiving a Telephone Interconnect Call

Telephone interconnect calls may only be received by MaxTrac 840 radios equipped with the receive only standard feature or the full interconnect (B20) option.

Placing a telephone call to the radio

To make a call to the radio, the land-line party dials an interconnect terminal phone number. If the system is busy, a normal busy signal will be heard. The caller must hang-up and try again. If the phone line is open, the caller will hear a high-pitched tone. The caller should enter the access code assigned to that radio unit. Both the land-line caller and the radio user will hear a ringing tone. **"PH"** will flash on the display (see illustration).

Answering a telephone call

To respond, take the microphone off the hook and press the **Phone** button. The radio will be removed from dispatch operation and a constant **"PH"** will be displayed. You may now press the PTT and talk.

External Alarm Option

If the mobile unit is equipped with the external alarm feature (see External Alarm section), engage it before you leave the vehicle. When a telephone call is received, the vehicle's horn will sound or the lights will flash for six seconds.

Discontinuing a Telephone Call

To terminate a call, press the **Phone** button again. If the the call is not disconnected, an invalid function "baaah" tone will sound after a short period.

Subfleet Telephone Interconnect Receive Only

In a subfleet telephone call, the land-line caller enters the access code of the subfleet. The subfleet mobile operators do not have to push the **Phone** button to be included in the conversation. If the subfleet is busy, the caller hears up to 20 seconds of fast, ringing tones. When the connection is is made, the land-line caller hears a high-pitched "di-di-dit" talk permit tone indicating the conversation may begin. The mobiles hear the voice without preliminary tones. All mobiles, whether or not equipped with telephone interconnect, may receive and respond to calls.

The land-line caller, who is involved in conversation with a subfleet, will hear up to 20 seconds of a high-pitched tone from the system central controller before the call times out. If the conversation is not completed in 20 seconds, the land-line caller must redial.

User Programmable Scan (B7 Package Model Only)

The B7 Package Model has scan as a standard feature. The scan feature is capable of detecting a request for Private Conversation, a Call Alert, or a phone call, as well as a voice transmission.

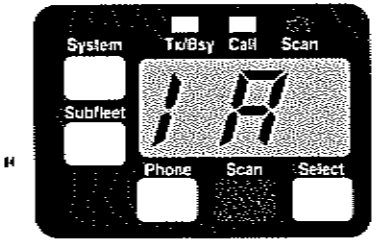
A scan list of up to 10 different modes can be programmed into the radio from the front panel. This list can include any combination of trunked systems and subfleets and conventional modes. The mode that is active when the scan feature is activated is referred to as the "home" mode. This mode is always automatically added to the scan list. Any combination of subfleets can be used except for a limit of 8 subfleets from any one trunked system.

Programming the Scan List

- Before the scan feature can be used, a scan list must be programmed into the radio. Programming is entered by holding the **Scan** button down for two seconds. The two digit display will flash during programming.
- Use the **System** and **Subfleet** buttons to scroll through the modes that can be added to the scan list and/or which are already in the list. Individual modes are added, deleted, or selected as the "designated" mode with one or several presses of the **Select** button.
- The "designated" mode will be checked for activity in between each other mode in the list. It will receive 1/2 of the total scan time. Do not confuse the designated mode with the "priority" mode on Motorola conventional systems. One mode will not take precedence (or priority) over another. Since the radio is scanning for activity on the designated mode more frequently, you have greater assurance of receiving important communications from that mode.
- The **Scan** LED lights solid to indicate that a mode is in the scan list, and it doesn't light if the mode in the flashing display is not on the list. If the **Scan** LED is flashing, the displayed mode is the "designated" mode.
- The scan list is limited to 10 trunked or conventional modes, with one of these modes being the designated mode. If you try to add more than 10, an invalid key chirp sounds. You will have to delete one mode from the list before another can be added. If you select a mode as the "designated" mode when a designated mode already exists, the radio will make the change and keep the previous designated mode on the list, but it will drop its designated status.

Programming the Scan List (cont.)

- To exit programming, press the **Scan** button once more.



MaxTrac 840™ B7 Model Packages
User Programmable Scan

Operating User Programmable Scan

- Once the scan list has been programmed, activate scanning by pressing the **Scan** button. The **Scan** LED will be on to indicate the scan feature is active. If the LED is flashing, it means the active mode is the designated mode. To turn scan off, press the **Scan** button once more.
- When scan detects a mode, the display will show the mode identification (see illustration). This remains true while the radio is actively receiving, and for an additional three seconds thereafter. During this time, if you take the microphone off its hook, enabling the radio to begin monitoring, you will automatically be locked on to that mode and you may respond by transmitting. If you wish to transmit on your original or home mode, unhook the microphone and press **Scan**; the radio will stop scanning.

Nuisance Delete Scan Feature

The scan feature also provides for a nuisance delete speciality. A mode with an unusual amount of traffic may be temporarily deleted from the scan list by pressing the **Select** button. Press **Select** with an extended two second hold while the mode is shown on the display. The mode is then removed from the list until the scan feature is turned off and on again. The "home" and "designated" modes cannot be deleted from the list with the nuisance delete feature. A bad key chirp will sound if you try deleting those modes using this feature.

Nuisance Delete Scan Feature (cont.)

If the MaxTrac radio is engaged in one of the following modes, the operator can only receive the type of calls indicated.

Call Mode Table

Mode of Operation	Other Calls Which Can Be Received
Subfleet mode	Fleet-wide calls Private Conversation™ calls Call Alert™ pages System-wide calls Telephone calls
Fleet-wide mode	All fleet-wide calls Private Conversation™ calls Call Alert™ pages System-wide calls Telephone calls
Private Conversation™ mode	Fleet-wide calls System-wide calls
Call Alert™ Encode mode	Fleet-wide calls System-wide calls
Telephone interconnect mode	System-wide calls

Call LED Status Indications:

Call Alert/Private Conversation LED Status

Option	Yellow LED	Status
Multiple Call Alert™ Encode	On; flashing	Page has been sent out.
	Off	Acknowledgement has been received.
Call Alert™ Decode	On; flashing	Call has been received.
Multiple Private Conversation™	On; continuous	Indicates radio is in the privacy mode.
OR Private Conversation™	On; flashing	Alert operator to incoming privacy call.

Accessories

Motorola offers a variety of accessories for MaxTrac 800 radios to increase communications efficiency. Many of the accessories available are listed below, but for a complete list, consult your sales representative.

HLN5290	Side mount battery cable adaptor (recommended for General Motors manufactured vehicles with side mount batteries for easier installation of battery cable)
HLN5292	Mini uhf connector to be added at end of cable (requires crimping tool)
66-80388A26	Crimping tool for customer installation requiring crimping of mini uhf connector
HSN4019	External speaker, 5 watt for high noise requirements
HLN4426	Key lock mount
HLN5226	Extra stability mount for high vibration environments
HLN5189	Non-locking trunnion
HKN4137	Power cable
HLN3087	840 Model External alarm relay kit (provides relay with cable kit for connection to horn or lights)
HLN9254	820 Model External alarm relay kit (provides relay with cable kit for connection to horn or lights)
HKN4284	Ignition switch cable
HLN9073	Compact microphone hang-up clip
HMN1035	Full size palm microphone
HLN4606	Full size palm microphone hang-up clip
HMN3013	Touch Code microphone (for D35MQA5GB3K, D35MWA5GB6K, and D35MWA5GB7K only, includes hang-up clip)
HMN4016	Noise-cancelling microphone
HPN1007	Power supply for control station
HMN1038	Desk microphone for control station
HKN4139	10 ft. power cable for cable station
HLN5309	Base tray for control station
MW5601	Spare accessory kits (includes power cable, trunnion with mounting hardware, microphone hang-up clip, and 3dB gain antenna with cable), specific items may be deleted from kit if desired

Options

External Alarm

This feature (B221) allows individuals to be alerted of calls when outside the vehicle. Through an external relay, the horn or lights of the vehicle will activate when a call is received. Call Alert signals, Private Conversation calls, and telephone interconnect calls will all activate the external alarm for six seconds.

MaxTrac 840 Models

Press the **Select** button to activate the external alarm feature. Several presses of the **Select** button may be required in some radios. The external alarm is active whenever the display shows **"HL"** (Horn/Lights).

In the B7 package the scan feature must be turned off when activating the alarm. If you first activate the alarm feature (**"HL"** is on the display), and then press the **Scan** button, the scan feature may be activated at the same time as the external alarm.

Pressing any button turns off an active alarm. To deactivate the external alarm feature, the **Select** button must be pressed.

MaxTrac 820 B3, B4, B5 Package Models

These models come structured for an external alarm controlled by a switch outside the radio. To use the feature, buy the appropriate cable kit (accessory HLN9254) and plug it into the back of the radio. After the relay is connected, the alarm will activate when the switch built into the cable kit is turned on.

Changing the Time-Out Timer

The time-out timer (which disables your transmission) may be changed through the field programmer. However, this is available only in 15, 30, or 60 second durations. If a specific time limit is not requested when the unit is ordered, the time-out timer will default to a 60 second limit.

Service

Proper repair and maintenance procedures will assure efficient operation and long life for this product. A Motorola maintenance agreement will provide expert service to keep this and all other communication equipment in perfect operating condition. A nationwide service organization is provided by Motorola to support maintenance and installation programs. Motorola makes available the finest service to those desiring reliable, continuous communications on a contract basis.

Motorola Customer Service Division is the largest service organization specializing in mobile communications. It includes over 900 authorized or company-owned stations. In addition, our products are serviced throughout the world by a wide network of company or authorized independent distributor service organizations. For a contract service agreement, please contact your nearest Motorola service representative, authorized Motorola dealer, or Motorola sales representative. If you suspect a radio problem, check the following items before requesting service.

1. *Radio Checks:*
   - Be sure the radio is turned on and passes the radio self-check.
2. *Operating Instructions:*
   - Review your operation instructions to ensure proper radio use.
3. *Problem(s) Not Solved:*
   - After following steps 1 and 2, if your radio still exhibits a problem, review your service agreement and call the applicable Motorola service representative.
   - If you do not have a service agreement on your radio, contact your nearest authorized Motorola service shop for guidance toward a prompt and expedient evaluation and/or repair.

For Service Information

If any questions arise, please call Florida Product Services.

1-800-523-4007 or 1-305-475-6170
TELEX: 441464 MOTC UI
FAX: 1-305-475-6006

FCC Licensing Information

Your MaxTrac radio operates on FM radio communication frequencies and is subject to the rules and regulations of the Federal Communications Commission (FCC). The FCC requires that all operators using private land mobile or general mobile radio frequencies obtain a radio license before operating their equipment. Application for your FCC license is made on FCC Form 574 for low-band, high-band, and UHF frequencies. For a license in the 800MHz or 900MHz band, you must complete the Form 574 and 574-A Supplemental Form. These forms, as well as a booklet entitled "Form 574 Instructions," can be obtained from:

FCC Supply Section
Administrative Services Division
1919 M St., NW
RM B-10
Washington, D.C. 20554
telephone 202-632-7272

The operator receives a license for use of the radio equipment under a specific eligibility and on a particular frequency or set of frequencies. To determine eligibility for use of private land mobile service frequencies, see FCC Rules and Regulations, Part 90. These may be found in the Code of Federal Regulations (CFR) at 47 CFR Part 90. The following subparts describe general eligibility requirements:

Subpart B:	Public Safety Radio Services
Subpart C:	Special Emergency Radio Services
Subpart D:	Industrial Radio Services, which include, among others, Business, Manufacturers, and Special Industrial Services
Subpart E:	Land Transportation Radio Service

Eligibility for use of the general mobile radio service frequencies is found under Part 95 of the Rules and Regulations, 47 CFR 95, subpart A.

Frequency coordination is now required for operation on most frequencies in the private land mobile radio services. Once the license application form is completed, it must be forwarded to the appropriate frequency coordination agency, which is determined by the operator's eligibility classification. The coordination agency assigns a frequency, or frequency pair, to the application and forwards it to the FCC for final processing. There is a frequency coordination fee, which must be included with the license application. Current fee charges can be obtained by calling your appropriate frequency coordination agency. See Communication Agencies section.

An exception to the requirement for frequency coordination in the private land mobile radio services is licensing for use of itinerant frequencies. Itinerant operation is defined by the FCC as operation of a radio station at unspecified locations for varying periods of time. Those applications do not need frequency coordination and may be sent directly to the FCC. Frequency coordination is also NOT required for licenses in the general mobile radio service; these applications are also sent to the FCC. See Communication Agencies section.

FCC Licensing Information (cont.)

The FCC charges a processing fee for all new, modified, or renewal license applications. This fee is payable by check or money order made out to the "Federal Communications Commission" and MUST be enclosed with the application. Any application without a check will be returned. (Exception: Applicants who are governmental entities and all applicants in any public safety or special emergency radio service are exempt from the FCC license fee.) Applications requiring coordination must have the FCC check, as well as the coordinator's check, attached when mailed to the coordinating agency. The coordinating agency will remove their check and will forward the coordinated application and FCC check to the FCC Licensing Division. Upon grant, the FCC will mail your radio station license to the address shown on your application Form 574.

Communication Agencies

If your eligibility is within the business radio service, contact the National Association of Business and Education Radio (NABER) for the NABER fee schedule and supplemental form to be completed and forwarded with Form 574 to:

NABER Frequency Coordination
1501 Duke St., Suite 200
Alexandria, VA 22314
telephone 703-739-0300

The business radio service itinerant frequencies are 27.49MHz, 35.04MHz, 151.625MHz, 464.500/469.500MHz pair and 464.550/469.550MHz pair. Complete Form 574 and send to:

FCC-Business Radio Service
P.O. Box 360291-M
Pittsburgh, PA 15251-6291
telephone 717-337-1212

If your eligibility is within the special industrial radio service, contact the Special Industrial Radio Service Association (SIRSA) for the SIRSA fee schedule. Complete Form 574 and send to:

SIRSA Frequency Coordination Dept.
1700 N. Moore St., Suite 910
Rosslyn, VA 22209
telephone 703-528-5115

The special industrial radio service itinerant frequencies are 43.04MHz, 151.505MHz, 158.400MHz, and 451.800/456.800MHz pair. Complete Form 574 and send to:

FCC-Other Industrial Services
P.O. Box 360354-M
Pittsburg, PA 15251-6354
telephone 717-337-1212

If your eligibility is within the manufacturer radio service, contact Manufacturers Radio Frequency Advisory Committee (MRFAC) for the MRFAC fee schedule and supplemental form to be completed and forwarded with Form 574 to:

MRFAC, Inc.
6269 Leesburg Pike, Suite 304
Falls Church, VA 22044
telephone 703-532-7459

If you want to operate on general mobile radio service frequencies, complete Form 574 and send to:

FCC-General Mobile Radio Service
P.O. Box 360373-M
Pittsburg, PA 15251-6373
telephone 717-337-1212

For information on other frequency coordinating agencies or additional licensing information, contact:

FCC
2025 M St., NW
Washington, D.C. 20554
telephone 202-632-7272.

Safety Information

Safety Standard

The FCC, with its action in General Docket 79-144, March 13, 1986, has adopted a safety standard for human exposure to radio frequency, electromagnetic energy emitted by FCC regulated equipment. Motorola subscribes to the same safety standard for the use of its products. Proper use of this radio will result in exposure below government limits.

The following precautions are recommended:

- DO NOT operate the transmitter of a MaxTrac radio when someone outside the vehicle is within 2 feet (0.6 meter) of the antenna.
- DO NOT operate the transmitter of a fixed radio (base station, microwave, rural telephone RF equipment) or marine radio when someone is within 2 feet (0.6 meter) of the antenna.
- DO NOT operate the transmitter of any radio unless all RF connectors are secure and any open connectors are properly terminated.
- TURN THE RADIO OFF when near electrical blasting caps or in an explosive atmosphere.
- All equipment must be properly grounded according to Motorola installation instructions for safe operation.
- All equipment should be serviced only by a qualified technician.

Refer to the appropriate section of the product service manual for additional pertinent safety information.

Installation Safety Warnings

Consider the occupants' safety when you choose a location for the radio. Do not mount the radio overhead or on a sidewall unless you take special precautions.

If someone were to remove the radio and fail to replace it properly, road shock could bump the radio loose, and the falling radio could, in some circumstances, cause serious injury to the driver or a passenger. In a crash, even when properly installed, the radio could break loose and become a dangerous projectile.

If you must mount the radio overhead or on a sidewall, give it the added protection of a retaining strap.

CAUTION: The following precautions should be followed for installation of antennas with mobile radio equipment with transmitter power in excess of 7 watts.

Note: For low-power MaxTrac radios (7 watts or less), there are no antenna type or installation restrictions.

Non-Metallic-Body Vehicles — In non-metallic-body vehicles with transmitters at any frequency having a power output in excess of 7 watts, do not install any type of antenna closer than 2 feet from any occupant of the vehicle. Failure to follow this procedure may result in the exposure of the vehicle occupants to radio frequency energy levels higher than recommended by the FCC.

Metal-Body Vehicles — In metal-body vehicles with transmitters at any frequency having a power output in excess of 7 watts, it is mandatory, when using a glass-mount antenna, that the installation instructions covering the location of the antenna at the top of the front or rear window and the cable routing be followed exactly as described. Failure to follow this procedure may result in the exposure of the vehicle occupants to radio frequency energy exposure levels higher than recommended by the FCC.

For other antenna types, follow the existing installation instructions. The best location for the antenna is at the center of the vehicle roof. A good alternate location is at the center of the trunk lid.

Important: If installations different from these recommendations have already taken place, **immediately notify your local service representative so that appropriate corrective action can be taken.**

Operational Safety Warnings

WARNING:

- **For vehicles equipped with electronic anti-skid systems, see "ANTI-SKID BRAKING PRECAUTIONS" publication, Motorola part number 68P81109E34.**
- **For vehicles equipped with electronic ignition systems, check the service manual for warnings about the use of two-way radio equipment in the vehicle.**
- **It is mandatory that radio installations in vehicles fueled by liquefied petroleum gas conform to the following standard:**

National Fire Protection Association standard NFPA 58 applies to radio installations in vehicles fueled by liquefied petroleum (LP) gas with a LP gas container in the trunk or other sealed-off space within the interior of the vehicles. This standard requires that:

1. Any space containing radio equipment shall be isolated by a seal from the space in which the LP-gas container and its fittings are located.

2. Remote (outside) fitting connections shall be used.

3. The container space shall be vented to the outside.

CAUTION: Unsafe use of converted mobile radio equipment for portable applications:

Motorola two-way radio products that have been designed for mobile operation **should not** be used as battery-operated portable units. In such use, there is the danger that the user or other persons will be exposed to excessive radio frequency energy levels. This warning applies to all two-way radio equipment radiating in excess of seven (7) watts RF power. Motorola strongly recommends that any product that converts high-power equipment for portable operation **not be used.**

Installation Planning and Procedures

Testing and Maintenance

Your MaxTrac radio is completely adjusted, tested, and inspected before shipment. However, FCC regulations state that a station license must be obtained for each radio installation (radio or base) by the owner of the equipment. The station licensee is responsible for ensuring the transmitter power, frequency, and deviation are within the limits permitted under the station license.

No technician's license is required for installing and maintaining radio equipment. However, the frequency and deviation of the transmitter must be checked on installation and at least once yearly.

Power Protection Circuitry

The radio you are installing has been tested for proper transmitter power output before leaving the factory. Each radio is set to the proper output power level while connected to an accurate 50-ohm load impedance. Once the power level has been set, the internal power control/protection circuitry will reduce the power output whenever it senses a load impedance significantly different from 50 ohms. This protection circuitry significantly enhances the radio's reliability with minimal performance degradation.

If you check transmitter output power levels during installation, be sure you are using a good 50-ohm load, with a minimum of adapters and using short test cables. Any load variation from 50 ohms may cause an apparent reduction in output power due to the normal operation of the control/protection circuitry. These variations in power with other than 50-ohm load impedance will be most pronounced in the 800MHz and 900MHz bands since cables, meters, connectors, etc. have larger effects in those bands. However, the factors are still significant at UHF and VHF and considerable care should be exercised at these frequencies. If output power seems to be unusually low (greater than can be explained by the normal calibration differences you experience), check your test setup. If output power goes up as you improve the quality of the load impedance (be sure to de-key when making any changes in load), the control/protection circuitry is performing normally.

Typical mismatches in the load impedance (greater than 1.2:1 VSWR [voltage standing-wave ratio]) may result in a 10-20% variation in the actual measured power output. Within these limits, the radio operates normally, and you should not attempt to service it.

Installation Planning - Mobile Radios

Planning is the key to fast, easy radio installation. Before a hole is drilled or a wire is run, inspect the vehicle and determine how and where you intend to mount the antenna, radio, and accessories. Plan wire and cable runs to provide maximum protection from pinching, crushing, and overheating.

Installation Planning - Base Control Stations

The base/control station option provides the radio with a desk microphone and power supply for use at a fixed location. All operations are the same as the radio, except for the desk microphone.

Choose a location for your base/control station as close as possible to where the antenna cable enters the building. Be sure 117Vac, 60Hz power is available. Make sure sufficient air can flow around the radio to permit adequate cooling.

Recommended Tools for Installation

The following tools are recommended for proper installation of your new radio.

- Portable Drill
- Hammer
- Center Punch
- 5/16" Hex-Nut Driver
- 1/4" Hex-Nut Driver
- Phillips #2 Screwdriver
- TORX® Screwdriver, T25
- 3/8" Diameter Drill Bit
- 5/16" Diameter Drill Bit
- 5/32" Diameter Drill Bit

Antenna Mounting

The best mounting location for the antenna is in the center of a large, flat conductive surface. In almost all vehicles, these requirements are best satisfied by mounting the antenna at the center of the roof. Some vehicles have a large trunk lid that provides a good antenna location. If the trunk lid is used, connect grounding straps between the trunk lid and vehicle chassis to insure the trunk lid is at chassis ground. See the instruction manual supplied with the antenna for complete installation information.

Radio Mounting

Non-Locking Trunnion/High-Power Sleeve

The standard, non-locking trunnion (or sleeve used on low-band, 35-watt 800MHz or 30-watt 900MHz models) allows the radio to be mounted to a variety of mounting surfaces. Be sure the mounting surface is able to adequately support the weight of the radio. Allow sufficient space around the radio for free air flow for cooling. Be sure the unit is close enough to the vehicle operator to permit easy access to operating controls. Although the trunnion can be mounted to a plastic dashboard, it is recommended that the mounting screws be located so they penetrate the supporting metal frame of the dashboard.

Floor Mount

A floor-mount wedge is available which allows the radio to be tilted at either 45 or 60 degrees. The sleeve-mounting hardware, which is standard with low-band, 35-watt 800MHz, and 30-watt 900MHz models, mates with this wedge. If the wedge is to be used with other models, the sleeve must be ordered separately.

Extra-Stability Mounting Tray

The optional extra-stability mounting tray is used in conjunction with the non-locking trunnion. If the radio is mounted on a rounded surface, you may need to supply and install shim washers (not provided) between the bracket and the mounting surface. Shims are necessary to tilt the radio because the heavy-duty bracket blocks the standard trunnion adjustments. Follow instructions provided with the option.

Note: The extra-stability mounting tray is not necessary for low-band, 35-watt 800MHz, or 30-watt 900MHz models as the sleeve mounting already provides maximum stability.

Locking Trunnion

The optional locking trunnion consists of a two-piece, trunnion-type mounting bracket equipped with a key lock and associated mounting screws and is designed to facilitate easy removal. The locking trunnion may be mounted on either metal or plastic surfaces, provided the mounting surface adequately supports the weight of the radio. Follow instructions provided with the option.

Before attempting to install the locking trunnion, examine the vehicle for suitable mounting locations. This bracket requires a flat mounting surface, 8" x 2" minimum with adequate clearance for inserting the radio. The chosen location should be convenient to the vehicle operator and provide access to the power and the antenna connectors. Be careful to choose a location that permits the locking trunnion to be removed from the mounting bracket. Vehicle operation should never be impaired by the location of the trunnion or radio.

Note: Overhead mounting is not recommended.

Begin Installation

DC Power Cable Installation

This MaxTrac radio must be operated only in negative-ground electrical systems. Reverse polarity does not damage the radio; however, radio protection circuits cause the cable fuse to open. Check the vehicle ground polarity before you begin installation to prevent wasted time and effort.

The 10-foot dc power cable shipped with the radio is long enough for installation in most vehicles. Begin the power cable installation in the following manner:

(1) Determine a routing plan for the power cable with reference to where the radio is to be mounted.

(2) Locate an existing hole with a grommet in the vehicle fire wall, or drill a 3/8" access hole at the location for passing the power cable into the engine compartment. Install a grommet with 1/4" internal diameter in the access hole to avoid damage to the cable.

CAUTION: A high degree of care should be exercised not to damage any existing vehicle wires.

(3) From inside the vehicle, feed the red and black leads (without lugs attached) through the access hole and into the engine compartment. See Figure 1.

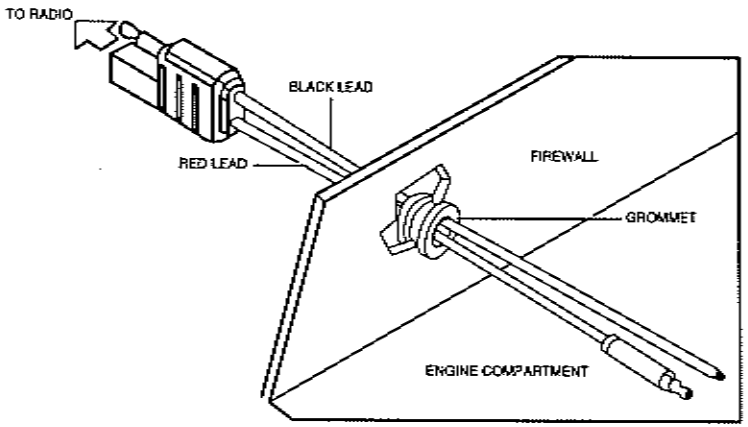


Figure 1. DC Power Cable Routing into Engine Compartment

DC Power Cable Installation (cont.)

(4) Locate the nearest available vehicle chassis-ground mounting point and shorten the black led to remove excess cable length.

(5) Install ring lugs (supplied) onto the stripped end of the power cable black lead. Also install a ring lug onto the stripped end of the red lead on the fuse holder as shown in Figure 2.

(6) Locate the fuse holder as close to the battery as possible and away from any hot-engine component. Mount the fuse holder using the provided mounting hole and dress wires as necessary. Connect the fuse holder red-adapter-lead plug to the mating receptacle on the red lead of the power cable as shown in Figure 2.

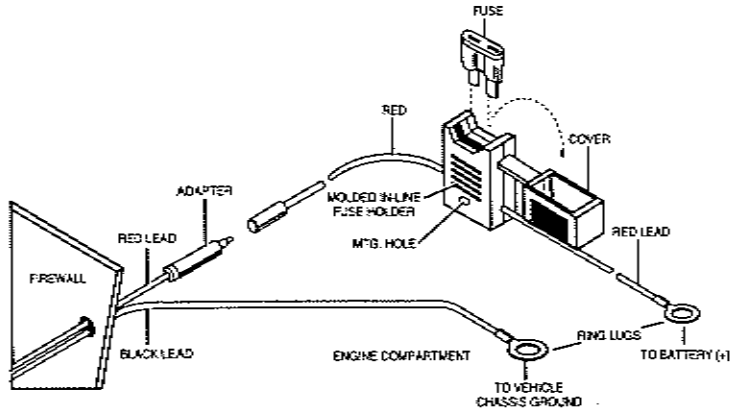


Figure 2. DC Power Cable Assembly

(7) Connect the power cable black lead directly to the vehicle chassis ground.

(8) Connect the power cable red lead from the fuse holder to the positive (+) battery terminal. Make sure the adapter cable is connected to the main power cable red lead.

Note: Failure to mount the red lead of the power cable kit directly to the battery may result in severe alternator-whine interference and cause the radio to revert to mode one each time the power is turned off.

Non-Locking Trunnion Installation

(1) Select the location to mount your radio either on the TRANSMISSION HUMP OR BELOW THE DASH (see Figure 4).

(2) Using the trunnion-mounting bracket as a template, mark the positions of the holes on the mounting surface. Use the innermost four holes for a curved mounting surface such as the transmission hump, and the four outmost holes for a flat surface such as under the dash.

(3) Centerpunch the spots you have marked and drill a 5/32" hole at each.

(4) Secure the trunnion-mounting bracket to the surface with the four (10-16x3/4") screws provided.

(5) Place the radio in the trunnion-mounting bracket and secure it with the two thumb screws provided.

(6) To complete your radio installation, plug the power cable into the radio power connector (see Figure 3).

(7) Mount the antenna using the instructions provided with the antenna kit. Run the coaxial cable to the radio mounting location. If necessary, cut off the excess cable and install the cable connector.

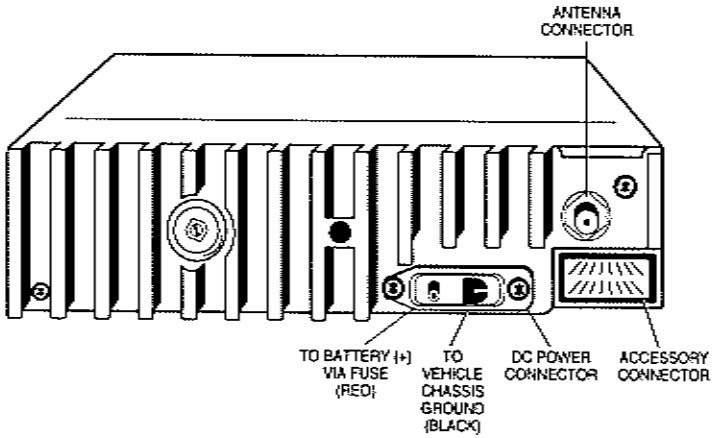


Figure 3. Connections to Rear Radio Panel

(8) Connect the antenna cable connector to the radio antenna connector on the rear of the radio (see Figure 3).

(9) Mount the microphone clip. Follow instructions provided with the microphone clip.

Non-Locking Trunnion Installation (cont.)

(10) Plug the microphone into the front panel connector. Your microphone has a telephone-type connector at the end of its cord. Connect and disconnect your radio microphone in the same manner you connect and disconnect your telephone handset.

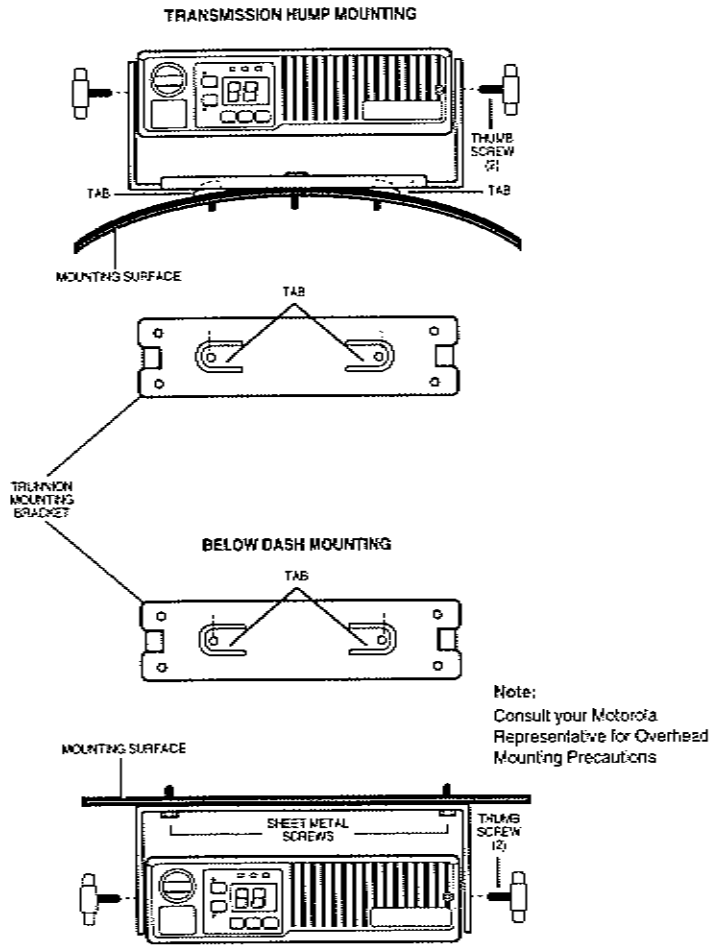


Figure 4. Trunnion Mount for Radio

Related Publications

MaxTrac™ Two-Way FM Radio
Detailed Service Information Manual.....68P80102W84

MaxTrac™ Help Card 68P81071C80

MaraTrac™/MaxTrac™/Radius™
General Service Information 68P81107C40

Contact your Motorola representative to order additional manuals.

Commercial Warranty (Standard)

Motorola radio communications products ("equipment") are warranted against defects in material and workmanship under normal use and service for a period of ONE (1) YEAR, except for crystal devices, channel elements, high-stability oscillators (other than reference oscillators used for frequency synthesis) and crystal filters, which are warranted for a period of ten (10) years, from the date of shipment. Parts, including crystals and channel elements, will be replaced free of charge for the full warranty period, but the labor to repair or replace defective parts within the original shipped item of equipment plus travel costs for work on non-movable installed equipment items will be provided for one hundred twenty (120) days from the date of shipment. After said one hundred twenty (120) days, customer must pay for the labor involved in repairing or replacing defective parts at Motorola's then current prevailing rates together with any travel or transportation charges to and/or from the place where warranty service is provided. This express warranty is extended by Motorola Communications and Electronics Inc., 1301 E. Algonquin Road, Schaumburg, Illinois 60196, to the original customer only, and only to those purchasing solely for commercial, industrial, or governmental use.

This warranty is given in lieu of all other warranties express or implied which are specifically excluded including, without limitation, warranties or merchantability or fitness for a particular purpose. In no event shall Motorola be liable for damages in excess of the price stated on the order for the warranted item of equipment, or for any loss of use, loss of time, inconvenience, commercial loss, lost profits or savings, or other incidental, special or consequential damages to the full extent such may be disclaimed by law, even if Motorola has been advised of the possibilities of such damage, because each equipment system is unique, Motorola disclaims liability for range, coverage, or operation of the system as a whole under this warranty except by a separate written agreement signed by an officer of Motorola.

Except for batteries, in the event of a defect or failure to conform to specifications established by Motorola for the item of equipment, or if appropriate, to specifications accepted by Motorola in writing, during the applicable periods stated above, Motorola, at its option, will either repair or replace the item of equipment or refund the purchase price thereof, and such action on the part of Motorola shall be the full extent of Motorola's liability hereunder, and customer's exclusive remedy.

This warranty does not cover defects or damages to the equipment resulting from:

(a) use of equipment in other than its normal and customary manner;

(b) misuse, accident or neglect;

(c) improper disassembly, testing, operation, maintenance, installation, modification, adjustment, alteration, or repair;

This warranty extends only to individual items or equipment; frequency sensitive components, towers, vidicon tubes and test equipment, and batteries sold for use on citizen band or marine products are excluded but carry their own separate warranty. Non-Motorola Inc. manufactured equipment is excluded from this warranty (unless bearing a Motorola part number in the form of an "alphanumeric number," for example, TDE6030B), but such equipment may be subject to a warranty provided by such equipment manufacturer(s), and a copy(ies) of which will be supplied to customer on specific written request.

Any claim for breach of this warranty shall be waived unless customer notifies Motorola's marketing representative or Motorola at the above address, Attention: Quality Assurance Department, within the applicable warranty period.

This warranty applies only within the fifty (50) United States and the District of Columbia.

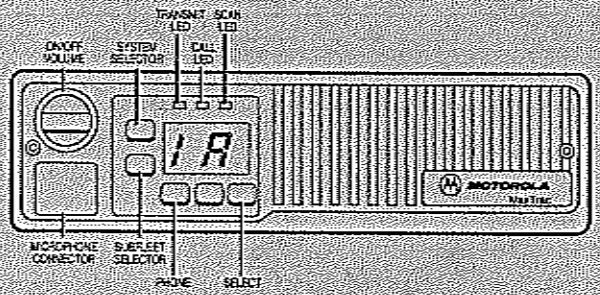
Computer Software Copyrights

The Motorola equipment described in this manual may include copyrighted Motorola computer programs stored in semiconductor memories or other media. Laws in the United States and other countries preserve for Motorola certain exclusive rights for copyrighted computer programs, including the exclusive right to copy or reproduce in any form the copyrighted computer program. Accordingly, any copyrighted Motorola computer programs contained in the Motorola equipment described in this manual may not be copied or reproduced in any manner without the express permission of Motorola. Furthermore, the purchase of Motorola equipment shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Motorola, except for the normal nonexclusive, royalty free license to use that arises by operation of law in the sales of a product.

Notes

MOTOROLA

Operating Instructions for MaxTrac™ 840 Dual-Mode Trunked Mobile Radio (with Scan)



Turning the Radio On

Rotating the **On/Off Volume** knob clockwise until it clicks will turn the radio on. You will hear a short chirp tone if the radio passes the radio self-check test. LED's will light indicating the last active system and subfleet used before the radio was turned off. The radio is now in standby mode and ready to receive or transmit.

Receive Operation

Select the system by pressing the **System** button until the proper system number is displayed. Select the subfleet by pressing the **Subfleet** button until the proper subfleet letter is shown. A conventional system will be indicated by a number without having any letter characters. A trunked system will always have a letter character in the right digit.

Trunked System Transmit Operation

When the **Transmit** LED lights steadily, or after the high-pitched "di-di-dit" talk permit tones sound, press the PTT button and speak into the microphone in a normal voice. If you hear a continuous tone when you press the PTT button, the system is alerting you that certain conditions exist. Refer to the table below.

Type of Tone	Cause	What to Do
TALK PROHIBIT CONSTANT TONE Continuous tone when PTT is pressed	Indicates an unsuccessful attempt to access the trunked system. OR, The system is temporarily out of service.	Try again when you are in a better location. For example, when you're on a hill, or closer to the system. Wait until the system is back in operation and try again.
BUSY TONE Continuous "bah bah bah" when PTT is pressed	Indicates all available channels are busy and the radio is in queue. Or, that the radio is no longer authorized to access the system.	Release the PTT button. You will hear call back tones when it's your turn for a channel.
TALK PERMIT or CALL BACK TONE high-pitched "dih-dih-dit" tone signifying channel availability	You now have access to a channel.	The radio holds the channel open for about three seconds. Press the PTT and begin your transmission.
VALID KEY TONE high-pitched "chirp" tone	Signifies button press was accepted.	Proceed with desired function.
INVALID KEY TONE "Bonk" tone when a button press is rejected	Indicates inoperative feature OR illegal button press in current operating mode.	Radio is not programmed for this function OR exit current operating mode and access desired function.
TIME-OUT TIMER TONE Low pitched "baaah" tone while transmitting	Indicates present transmission will end in four seconds.	Finish your transmission before your transmitter is disabled.
FAILSOFT TONE Continuous faint "beeping" tone every 10 seconds	Indicates failsoft operating conditions. A system failure has occurred and the mobile is operating on one channel in the conventional mode.	You can still transmit and receive, but you must share a channel with your other groups until the system is repaired.

Conventional System Transmit Operation

The red **Transmit** indicator (LED) will flash when there is another unit active on the channel. Do not transmit if anyone else is using the channel. When you press the PTT button on your microphone, the transmit indicator will light steadily to indicate that you are "on the air." It will remain lit until the PTT button is released.

Receiving a Call Alert™

When a Call Alert is received, the **Call** LED will flash, the display will show "**CA**," and four chirp tones will be sound every four seconds. Flashing and beeping continues until the PTT, the **System**, or the **Call** button is pressed.

Receiving a Private Conversation™ call

When receiving a Private Conversation, the Call **LED** will flash, "**PC**" will flash on the display, and two beeps will sound. This is followed by the caller's message.

Take your microphone off its hook and press the **Select** button to respond in the Private Conversation mode. The **Call** LED will now light steadily. Take the microphone off its hook and press the PTT button. Push the **Select** button and hang up your microphone to return to normal dispatch.

Receiving a Telephone Interconnect call

A simulated telephone ring and the display flashing "**PH**" will alert you to a phone call. To answer, take the microphone off its hook and press the **Phone** button. The radio will no longer be in the normal dispatch mode, and a constant "**PH**" will be displayed. You may now press the PTT and talk. Press the **Phone** button again and hang up your microphone to return to the dispatch mode.

Using the Scan Feature

Before the scan feature can be used, a scan list must be programmed into the radio. Programming is entered by holding the **Scan** button down for two seconds. The two digit display will flash during programming. Additional modes are accessed for programming by using the **System** and **Subfleet** buttons. Individual modes are added, deleted, or selected as the "designated" mode with one or several presses of the **Select** button. The designated mode will be checked for activity in between each other mode in the list. It will therefore receive 1/2 of the total scan time.

During programming, the **Scan** LED lets you know whether or not a mode is in the list. If the **Scan** LED is off, the mode indicated by the flashing display is not in the list. If the LED is on, that mode is in the list. If the **Scan** LED is flashing, the displayed mode is the designated mode.

The scan list can include up to 10 modes, trunked or conventional, with one of those modes as the designated mode. Press the **Scan** button to exit programming.

To activate scan, press the **Scan** button. The **Scan** LED will be on to indicate scan is active. If the **Scan** LED is flashing, it means the active mode is the designated mode. To turn off scanning, press the **Scan** button once more. See your Operating Instruction manual for further details.

Standard Encode Features

Depending on a radio's configuration it may be capable of initiating phone calls, single or multiple private conversations, or Multiple Call Alert encode, or all of these features. Refer to your Operating Instruction manual for using these features.

Operating the External Alarm (Additional Option Required)

While the scan feature is turned off, press the **Select** button to enable the external alarm feature. In some radios several presses may be required. The external alarm is enabled whenever the display shows "**HL**" (Horn/Lights). If a Call Alert™, Private Conversation™, or Telephone Interconnect call is received while this feature is on, the external alarm will be activated and remain active for six seconds. Pressing any button turns off an active alarm. The **Select** button must be pressed to disable the external alarm feature.

The scan feature can be active at the same time as the external alarm by first enabling the alarm feature; that is, the display shows "HL." Then, press the **Scan** button.

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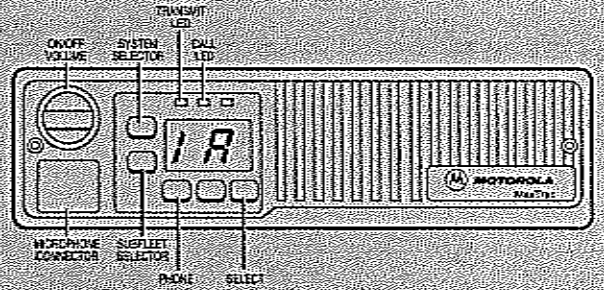
Operating Instructions for MaxTrac™ 840

Dual-Mode Trunked Mobile Radio (without Scan)



Turning the Radio On

Rotating the **On/Off Volume** knob clockwise until it clicks will turn the radio on. You will hear a short chirp tone if the radio passes the radio self-check test. LED's will light indicating the last active system and subfleet used before the radio was turned off. The radio is now in standby mode and ready to receive or transmit.

Receive Operation

Select the system by pressing the **System** button until the proper system number is displayed. Select the subfleet by pressing the **Subfleet** button until the proper subfleet letter is shown. A conventional system will be indicated by a number without having any letter characters. A trunked system will always have a letter character in the right digit.

Trunked System Transmit Operation

When the **Transmit** LED lights steadily, or after the high-pitched "di-di-dit" talk permit tones sound, press the **PTT** button and speak into the microphone in a normal voice. If you hear a continuous tone when you press the **PTT** button, the system is alerting you that certain conditions exist. Refer to the table below.

Type of Tone	Cause	What to Do
TALK PROHIBIT CONSTANT TONE Continuous tone when PTT is pressed	Indicates an unsuccessful attempt to access the trunked system. OR, The system is temporarily out of service.	Try again when you are in a better location. For example, when you're on a hill, or closer to the system. Wait until the system is back in operation and try again.
BUSY TONE Continuous "bah bah bah" when PTT is pressed	Indicates all available channels are busy and the radio is in queue. Or, that the radio is no longer authorized to access the system.	Release the PTT button. You will hear call back tones when it's your turn for a channel.
TALK PERMIT or CALL BACK TONE high-pitched "di-di-dit" tone signifying channel availability	You now have access to a channel.	The radio holds the channel open for about three seconds. Press the PTT and begin your transmission.
VALID KEY TONE high-pitched "chirp" tone	Signifies button press was accepted.	Proceed with desired function.
INVALID KEY TONE "Bonk" tone when a button press is rejected	Indicates inoperative feature OR illegal button press in current operating mode.	Radio is not programmed for this function OR exit current operating mode and access desired function.
TIME-OUT TIMER TONE Low pitched "baaah" tone while transmitting	Indicates present transmission will end in four seconds.	Finish your transmission before your transmitter is disabled.
FAILSOFT TONE Continuous faint "beeping" tone every 10 seconds	Indicates failsoft operating conditions. A system failure has occurred and the mobile is operating on one channel in the conventional mode.	You can still transmit and receive, but you must share a channel with your other groups until the system is repaired.

Conventional System Transmit Operation

The red **Transmit** indicator (LED) will flash when there is another unit active on the channel. Do not transmit if anyone else is using the channel. When you press the PTT button on your microphone, the transmit indicator will light steadily to indicate that you are "on the air." It will remain lit until the PTT button is released.

Trunking System Features

Receiving a Call Alert™

When a Call Alert is received, the **Call** LED will flash, the display will show "**CA**," and four chirp tones will be sound every four seconds. Flashing and beeping continues until the PTT, the **System**, or the **Call** button is pressed.

Private Conversation™

Receiving a Private Conversation call

When receiving a Private Conversation, the Call **LED** will flash, "**PC**" will flash on the display, and two beeps will sound. This is followed by the caller's message.

Press the **Call** button to respond in the Private Conversation mode. The **Call** LED will now light steadily. Take the microphone off its hook and press the PTT button.

Push the **Call** button again to return to normal dispatch.

Sending a Private Conversation call

Press the **Call** button to activate Private Conversation. The letters "**PC**" will be displayed and the **Call LED** will light to indicate a private call mode.

Press the PTT to initiate the private call with the supervisory unit.

Press the **Call** button to return the radio to the last used talk group.

Telephone Interconnect Calling on a Trunked System

Receiving a Telephone Interconnect call

A simulated telephone ring and the display flashing "**PH**" will alert you to a phone call. To answer, take the microphone off its hook and press the **Phone** button. The radio will no longer be in the normal dispatch mode, and a constant "**PH**" will be displayed. You may now press the PTT and talk. Press the **Phone** button again to return to the dispatch mode.

Placing a Telephone Interconnect call

Press the **Phone** button. "**PH**" will be displayed and you will hear a dial tone. If the system is busy, you will hear a short busy tone and will be placed in a queue. When the system is free, you will hear a dial tone. You may now start TouchCode™ dialing. Press the **Phone** button to disconnect the call.

Operating the External Alarm

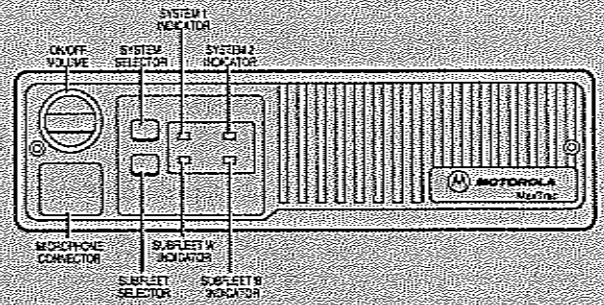
Pressing the **Select** button enables the external alarm allowing your unit to control an external horn or lights, or both. "**HL**" will be on the display. If a Call Alert, Private Conversation, or Telephone Interconnect call is received while in this mode, the external alarm will activate and will remain active for six seconds.

Pressing the **Select**, PTT, or any other button turns off an active alarm. The **Select** button must be pressed to disable the option.

For operation of Multiple Private Conversation and Multiple Call Alert Encode features in supervisor units, refer to the Operating Instructions manual.

MOTOROLA

Operating Instructions for MaxTrac™ 820 Trunked Mobile Radio



Turning the Radio On

Rotating the **On/Off Volume** knob clockwise. The last active system and subfleet indicator LED's will light. (For operation of a model with one system and one subfleet, use of other front panel controls is not necessary.)

Receive Operation

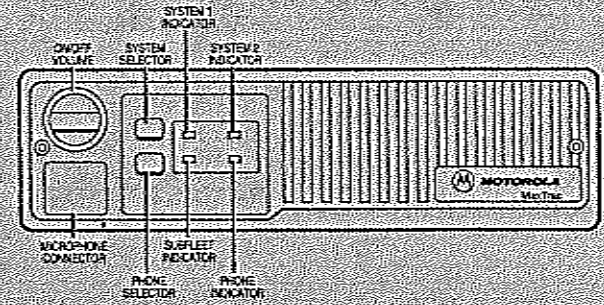
Select the system by pressing the **System** button and toggling between systems. The green LED will light below the selected system number. Press the **Subfleet** button until the amber LED appears below the desired subfleet.

Transmit Operation

Push down the PTT button on the microphone. When the System LED lights red, or after you hear the talk-permit tones sound, hold the microphone about 2 inches from your mouth and speak in a normal voice. If you hear a continuous tone when you press the PTT button, the system is alerting you that certain conditions exist. The table on the reverse side of this card lists tone signals and gives their meanings.

Receiving a Call Alert™ (Not applicable to one system and one subfleet model)

When a Call Alert is received, indicating a message from the dispatcher or supervisor unit, the active subfleet indicator will flash and a series of four chip tones will sound every four seconds. The LED remains flashing and the tones continue until the microphone PTT or the **System** button is pressed.



The instructions above apply to this model with the exception of subfleet selection and with the addition of the following:

Placing a Telephone Interconnect call

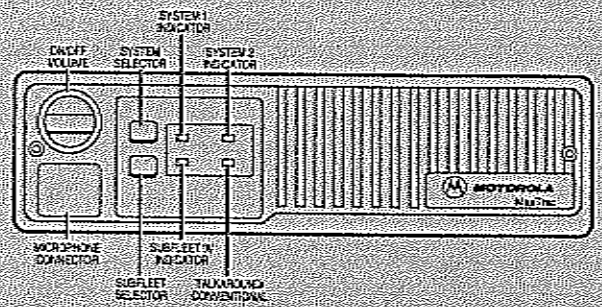
Press the **Phone** button. The **Phone** LED will light and you will hear a dial tone. If the system is busy, you will hear a short busy tone and will be placed in queue. When the system is free, you will hear a dial tone and may start Touch-Code™ dialing. Operation is discontinued by pressing the **Phone** button.

Receiving a Telephone Interconnect call

When a ring tone is heard and the **Phone** LED is flashing, press the **Phone** button.This places the radio in the interconnect mode. To respond, take the microphone off its hook and press the PTT. Discontinue the operation by pressing the **Phone** button.

MOTOROLA

Operating Instructions for MaxTrac™ 820 Dual-Mode Trunked Mobile Radio



Turning the Radio On

Rotating the **On/Off Volume** knob clockwise until it clicks will turn the radio on. You will hear a short chirp tone if the radio passes the radio self-check test. LED's will light indicating the last active system and subfleet used before the radio was turned off. The radio is now in standby mode and ready to receive or transmit.

> **Note:** The radio should be turned off whenever the engine is off to avoid draining the vehicle battery.

Trunked Receive Operation

Select the system by pressing the **System** button and toggling between systems. The green LED will light below the selected system number. Press the **Subfleet** button until the subfleet A indicator LED is on.

Trunked Transmit Operation

Push down the PTT button on the microphone. When the System LED is lit, or after you hear the talk-permit tones sound, hold the microphone about 2 inches from your mouth and speak in a normal voice. If you hear a continuous tone when you press the PTT button, the system is alerting you that certain conditions exist. The table on the reverse side of this card lists tone signals and gives their meanings.

Receiving a Call Alert™

When a Call Alert is received, indicating a message from the dispatcher or supervisor unit, the active subfleet indicator will flash and a series of four chip tones will sound every four seconds. The LED remains flashing and the tones continue until the microphone PTT or the **System** button is pressed.

Conventional System or Talk-around Mode Operation

Receiving

Pressing the Subfleet Selector button will alternately take the radio from Trunked operation to Conventional operation. The Conventional operation is the same regardless of which Trunked system indicator is active. Look to see if the **Talk-around/Conventional (T/A)** indicator is lit. If it is active, then the radio is operating in the Conventional mode and not in its Trunked mode. When the radio is in its Conventional operation, it will not receive a Call Alert or any signal from the Trunked system.

Transmitting

If the Conventional/Talk-around (T/A) indicator is flashing before you press the PTT button, it means your channel is busy and you should wait until the indicator is steady before you transmit. The active System indicator will turn from green to red during the time you are transmitting.

Note: Because this is Conventional operation, you may enable the channel monitoring function by taking the microphone "off hook" (taking it off its hang-up clip). In this condition any Private-Line® (PL), or Digital Private-Line™ (DPL), squelch code will be temporarily turned off and you will hear all activity on the channel.

Table of Trunking Alert Tones

Type of Tone	Cause	What to Do
TALK PROHIBIT CONSTANT TONE Continuous tone when PTT is pressed	Indicates an unsuccessful attempt to access the trunked system. OR, The system is temporarily out of service.	Try again when you are in a better location. For example, when you're on a hill, or closer to the system. Wait until the system is back in operation and try again.
BUSY TONE Continuous "bah bah bah" when PTT is pressed	Indicates all available channels are busy and the radio is in queue. Or, that the radio is no longer authorized to access the system.	Release the PTT button. You will hear call back tones when it's your turn for a channel.
TALK PERMIT or CALL BACK TONE high-pitched "d-di-dit" tone signifying channel availability	You now have access to a channel.	The radio holds the channel open for about three seconds. Press the PTT and begin your transmission.
VALID KEY TONE high-pitched "chirp" tone	Signifies button press was accepted.	Proceed with desired function.
INVALID KEY TONE "Bonk" tone when a button press is rejected	Indicates inoperative feature OR illegal button press in current operating mode.	Radio is not programmed for this function OR exit current operating mode and access desired function.
TIME-OUT TIMER TONE Low pitched "baaah" tone while transmitting	Indicates present transmission will end in four seconds.	Finish your transmission before your transmitter is disabled.
FAILSOFT TONE Continuous faint "beeping" tone every 10 seconds	Indicates failsoft operating conditions. A system failure has occurred and the mobile is operating on one channel in the conventional mode.	You can still transmit and receive, but you must share a channel with your other groups until the system is repaired.

General Safety Information

The FCC, with its action in General Docket 79-144, March 13, 1985, has adopted a safety standard for human exposure to radio frequency, electromagnetic energy emitted by FCC regulated equipment. Motorola subscribes to the same safety standard for the use of its products. Proper use of this radio will result in exposure below government limits.

The following precautions are recommended:

- DO NOT operate the transmitter of a MaxTrac radio when someone outside the vehicle is within 2 feet (0.6 meter) of the antenna.
- DO NOT operate the transmitter of a fixed radio (base station, microwave, rural telephone RF equipment) or marine radio when someone is within 2 feet (0.6 meter) of the antenna.
- DO NOT operate the transmitter of any radio unless all RF connectors are secure and any open connectors are properly terminated.
- TURN THE RADIO OFF when near electrical blasting caps or in an explosive atmosphere.
- All equipment must be properly grounded according to Motorola installation instructions for safe operation.
- All equipment should be serviced only by a qualified technician.

68P80900Z54-A

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Fort Lauderdale, Florida 33322